2. The apparatus of claim 1, wherein said at least one cross-linking agent comprises a group IIA cation.

3. The apparatus of claim 1, wherein said group IIA cation comprises Ca^{+2}.

4. The apparatus of claim 1, wherein said gel further includes a buffer compound for maintaining said gel at a pH of 5 to 9.

5. An electrophoresis apparatus comprising:

an electrophoresis medium comprising a gel comprising gellan gum and at least one cross-linking agent comprising ethylene diamine; and

a means for exposing said electrophoresis medium to an electric field.

6. The apparatus of claim 5, wherein said gel further includes a buffer compound for maintaining said gel at a pH of 5 to 9.

7. The apparatus of claim 5, wherein said gel further comprises a size-separation modifying polymer.

8. A electrophoresis apparatus comprising:

an electrophoresis medium comprising a gel comprising gellan gum and at least one cross-linking agent comprising hydroxy propane diamine; and

means for exposing said electrophoresis medium to an electric field.

9. The apparatus of claim 8, wherein said gel further includes a buffer compound for maintianing said gel at a pH of 5 to 9.

10. The apparatus of claim 8, wherein said gel further comprises a size-separation modifying polymer.

11. A method for recovering a biological material comprising:

adding a mixture containing a biological material to an electrophoresis medium comprising a gel including gellan gum and a divalent metal cation cross-linking agent;

exposing said electrophoresis medium to an electric field to separate in said electrophoresis medium said biological material from other compounds in said mixture;

removing a zone of the electrophoresis medium containing the biological material from the electrophoresis medium;

exposing the removed zone of electrophoresis medium to a chelating agent to chelate the divalent metal cation and, thereby, liquefy the gel of the removed zone of electrophoresis medium; and

separating the biological material from the liquefied gel of the removed zone of electrophoresis medium, thereby recovering the biological material.

12. The method of claim 11, wherein said separation step includes centrifuging the liquefied gel containing the biological material.

13. The method of claim 11, wherein said method further comprises contacting the removed zone of the electrophoresis medium to a membrane to bind the biological material in the removed zone to said membrane prior to exposing the removed zone to said chelating agent; and wherein the biological material remains bound on said membrane after said gel is liquefied.

14. The method of claim 11, wherein said at least one cross-linking agent comprises a group IIA cation.

15. The method of claim 11, wherein said group IIA cation comprises Ca^{+2}.

16. The method of claim 11, wherein said gel further includes a buffer compound for maintaining said gel at a pH of 5 to 9.

17. The method of claim 11, wherein said gel further comprises a size-separation modifying polymer.

18. A method for recovering a biological material comprising:

adding a mixture containing a biological material to an electrophoresis medium comprising a gel including gellan gum and a diamine cross-linking agent;

exposing said electrophoresis medium to an electric field to separate in said electrophoresis medium said biological material from other compounds in said mixture;

removing a zone of the electrophoresis medium containing the biological material from the electrophoresis medium;

adding a pH modifying agent to the removed zone of electrophoresis medium to increase the pH and liquefy the gel of the removed zone of electrophoresis medium; and

separating the biological material from the liquefied gel of the removed zone of electrophoresis medium, thereby recovering the biological material.

19. The method of claim 18, wherein said separation step includes centrifuging the liquefied gel containing the biological material.

20. The method of claim 18, wherein said method further comprises contacting the removed zone of electrophoresis medium to a membrane to bind the biological material in the removed zone to the membrane prior to exposing the removed zone to said pH modifying agent; and wherein the biological material remains bound on said membrane after said gel is liquefied.

21. The method of claim 18, wherein the diamine comprises ethylene diamine.

22. The method of claim 18, where the diamine comprises hydroxy propane diamine.

23. The method of claim 18, wherein said gel further includes a buffer compound for maintaining said gel at a pH of 5 to 9.

24. The method of claim 18, wherein said gel further comprises a size-separation modifying polymer.

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